Lupin Mines Incorporated

A wholly owned indirect subsidary of Elgin Mining Inc.

Lupin Mine Site

Nunavut, Canada

Liquid Waste and Stormwater Management Plan

(Care and Maintenance)

March 2012

Lupin Mines Incorporated
Elgin Mining Inc.
#201 - 750 West Pender Street
Vancouver, BC V6C 2T7

Document Control

Revision No	Date	Details	Author	Approver
1.0	20/03/12	Reformatted to Lupin Mines standard. Revised and updated to reflect new ownership and contact information. Updated figures to reflect current site conditions. Document re-write, primarily for clarity and organization. Addressed comments from AANDC (2010), EC (2009) Revised to include liquid waste management	S. Hamm	P. Downey

Table of Contents

1 Introduction 1

1.1 Project and Company Information 1

1.2 Site Location 2

1.3 Environmental Policy- Key Components 2

1.4 Purpose and Scope 4

2 Stormwater Management 4

2.1 Facilities 6

2.2 Best Management Practices 6

3 Liquid Waste 7

3.1 Domestic Waste 8

3.2 Industrial Waste 8

Figures

Figure 1 Location Map, Lupin Mine 3

Figure 2 Lupin Mine Stormwater Drainage 5

1 Introduction

Lupin Mines Incorporated (LMI), a wholly owned indirect subsidiary of Elgin Mining Inc. (Elgin), has prepared this Liquid Waste and Stormwater Management Plan (the Plan).

An annual review of the Plan takes place and revisions are submitted as necessary with the annual report. The current Type A water licence 2AM-LUP0914 (Water Licence) for the Lupin Gold Mine (Lupin or the Lupin Mine) is valid until March 31, 2014 and has been kept in good standing.

1.1 Project and Company Information

Elgin is a Canadian based company focused on the exploration and development of the Lupin Mine and Ulu Gold Project, both located in Nunavut, Canada.

Elgin purchased LMI, which owns the Lupin Mine, from MMG Resources Ltd. in July 2011. The Lupin site was an operational underground gold mine from 1982 to 2005 with temporary suspensions of activities between Jan 1998 and April 2000, and again between Aug 2003 and March 2004. The mine resumed production in March 2004 until 2005. Since 2005, the site has remained in care and maintenance.

An exploration program is currently underway at the Lupin site under water licence 2BE-LEP1217. All camp infrastructure required for the exploration program currently exists at the Lupin Mine site, which has previously been screened by the Nunavut Impact Review Board under file 99WR053 and approved by the Nunavut Water Board under water licence 2AM-LUP0914.

Company:	LMI
Project:	Lupin Mine, Nunavut
Company Address:	201 – 750 W Pender St, Vancouver, BC, V6C 2T7
Telephone:	604-682-3366
Email:	shamm@elginmining.com
Attention:	Sharleen Hamm, Manager, Environment
Effective date:	30 March 2012

Distribution List:

Patrick Downey	Chief Executive Officer
Peter Tam	Chief Financial Officer
Michele Jones	Manager, Corporate Affairs
Vivian Park	Manager, Exploration
Sharleen Hamm	Manager, Environment
Karyn Lewis	General Administration

Additional copies of this Plan are available from General Administration.

This Plan will be posted in key locations at the site, and all employees and contractors will be made aware of its contents.

1.2 Site Location

The Lupin Mine is located in Kitikmeot Region, Nunavut, 400 km north of Yellowknife, Northwest Territories and 285 km southeast of Kugluktuk. The geographic center of that property is 65° 45'29" N / 113° 13'10W (Figure 1). It is on the western shore of Contwoyto Lake, approximately 60 km south of the Arctic Circle.

1.3 Environmental Policy- Key Components

LMI looks to our employees, contractors and managers to adopt and grow a culture of environmental excellence. Together we achieve this by:

- Promoting environmental stewardship in all tasks. Nothing is too important that it cannot be done in a clean and responsible manner. We strive towards maintaining a zero-incident work place.
- Recognizing that we have a shared responsibility as stewards of the environment in which we operate. We will not walk away from a non-compliant act.
- Identifying, managing and mitigating environmental, business and social risks in an open, honest and transparent manner.
- Planning our work so it is done in the cleanest possible manner and executing work according to plan.
- Continually improving environmental and operational performance by setting and reviewing achievable targets.
- Providing appropriate and necessary resources in the form of training, personnel and capital, including that required for closure planning and reclamation.
- Managing our materials and waste streams, maintaining a high degree of emergency response preparedness and minimizing our operational footprint to maintain environmental protection at all stages of project development.
- Seeking to understand, learn from and mitigate the root causes of environmental incidents and near misses when they do occur.
- Employing systems and technology to achieve compliance, increase efficiency and promote industry best practices in development, operations and environmental stewardship.

Legend

Project Location

Coordinate System: NAD_1983_UTM_Zone_12N

Map Sources/Notes:
Various Canadian Government Websites - Feb 2012

0 60 120 240 360 480 600 Km

1:15,000,000

Approved By: SH
Prepared By: PW
Project No.: LUP
Date Revised: 23 Mar 2012
File Name: Lup-12-11-01-LocationMap-A.mxd

Project: **Lupin Project**
Location: Kitikmeot Region, Nunavut, Canada
Stormwater Management Plan- Water Licence 2AM-LUP0914

Location Map - Lupin Mine

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: **1**
Rev: 120323

1.4 Purpose and Scope

This Plan is designed to provide the necessary information pertaining to liquid waste and stormwater management during routine care and maintenance at the Lupin Mine. Stormwater management planning is important to manage and control the run-off associated with precipitation events. By managing overland flow of run-off, and site activities and equipment to ensure leaks to the ground are minimized, environmental impacts resulting from stormwater quality and quantity can be mitigated. Liquid waste management planning is necessary to ensure wastewater is appropriately stored, treated and discharged to the environment in compliance with the Water Licence.

The objectives of the Plan are to:

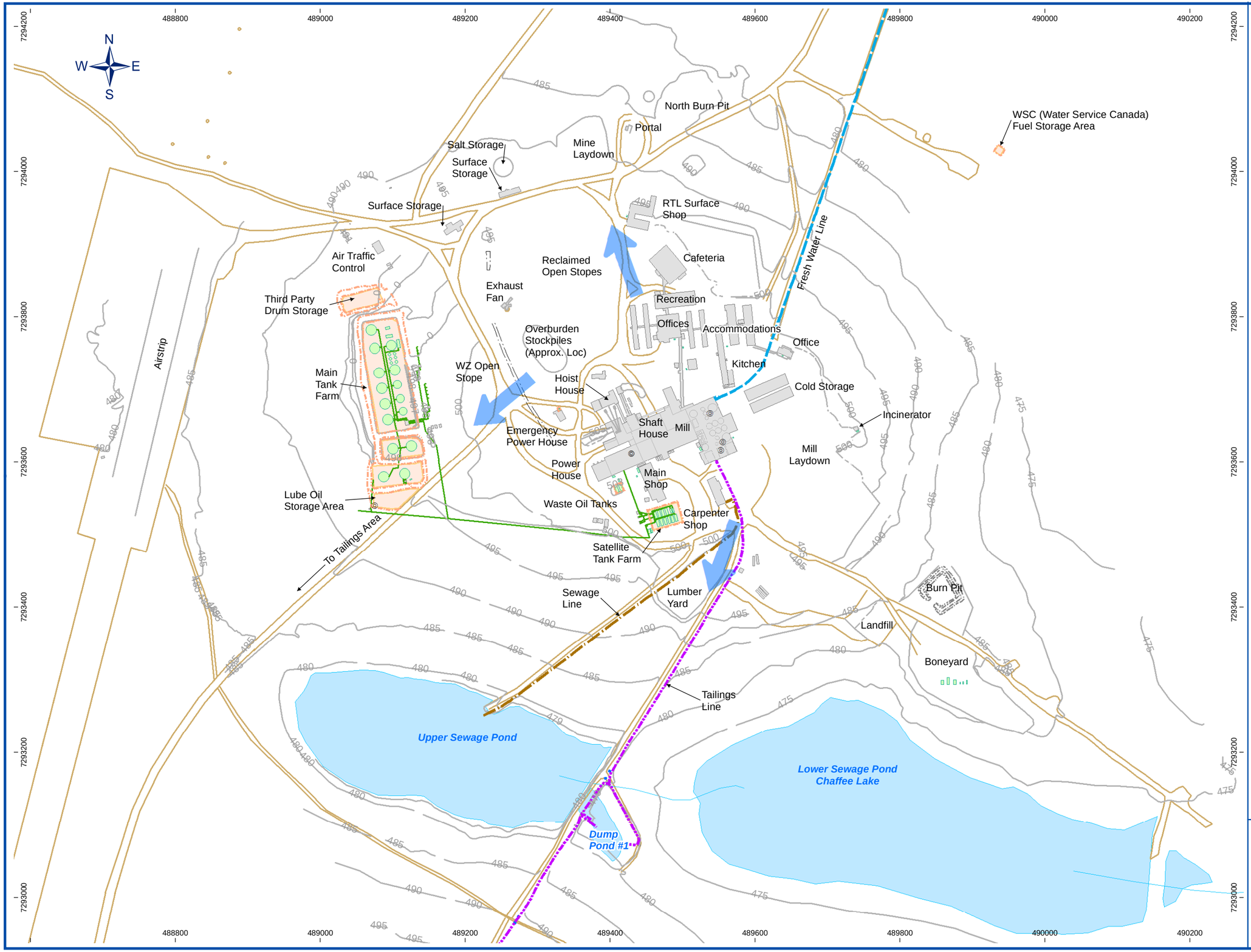
- describe source and fate of stormwaters and waste water on the Lupin site; and
- outline measures in place to mitigate impacts to the environment resulting from stormwater runoff and waste water discharge.

2 Stormwater Management

The Lupin Mine is constructed on a topographic dome. Drainage to the northwest is towards the main tank farm, which is isolated by a containment berm system. Drainage to southwest and south reports to the Sewage Lakes Disposal Facility, which is contained by dykes. The north and east perimeter of the site is composed of laydown pads, graded to direct over land flow to either the airstrip access road, the surface crusher access road or the burn pit access road.

Precipitation and the overland flow of surface water can encounter surficial materials such as disturbed native soils and the fine-grained fraction of waste rock materials, and can mobilize fine particulates, chemicals and contaminants contained therein. The soil horizon in the Arctic is extremely thin to non-existent, so the volume of disturbed soil contained in stormwater runoff is minimal. The majority of sediment contained in runoff is waste rock fines, typically exposed during mining activities and found in areas generally categorized as surface ore excavations, waste rock storage dumps, sand stockpiles, roads, and miscellaneous "administrative" areas such as parking lots, storage yards (laydowns), and buildings. No potential pollutants to stormwater are known to exist in the sediment at the site.

Site facilities at Lupin relevant to stormwater management planning include roads, the mine site and the air strip.



Legend

- Contour 5m
- Water Body 50k Topo
- Building
- Sump
- Site Features
- Tanks
- Fuel Storage Containment Area
- Berm Tank Farm
- Berm Burn Pit
- Slope Break
- Roads
- Fuel Pipe
- Tailings Line
- Water Pipeline (8 in Diam)
- Sewage Pipeline (6 in Diam)
- Direction of Surface Water Flow

Map Sources/Notes:
Topographic features from 1:50,000 goverment topographic data.
Site Layout based on drawing by Morrow Environmental titled "Site Plan", 2005. File A053017R00.
Fuel tank and Fuel Containment layouts adapted from drawings by Emerson Engineering dated Oct 17, 2011 and from data gathered during a site visit by Elgin Mining staff in February

Coordinate System: NAD_1983_UTM_Zone_12N

0 25 50 100 150 200 250 Meters

1:5,000

Approved By: SH
Prepared By: PW
Project No.: LUP
Date Revised: 28 Mar 2012
File Name: Lup-12-11-02-StormWaterMgmnt-B.mxd

Project: **Lupin Gold Mine**
Location: Kitikmeot Region, Nunavut, Canada

Stormwater Management Plan - Water Licence 2AM-LUP0914

Lupin Mine Stormwater Management Water Licence 2AM-LUP0914

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: 2
Rev: 120328

2.1 Facilities

2.1.1 Mine Site Area

The mine site area referred to in this Plan includes: mine plant buildings; shops; accommodations; laydowns; storage facilities; weather station; main tank farm. Surface runoff from these areas flows towards either the main tank farm area, the sewage pond system or access roads to the airstrip, burn pit or crusher.

Stormwater runoff quantities originating from the roofs of buildings is minor in comparison with overland runoff flow volumes, and as such, will be considered along with that from the rest of the site.

2.1.2 Roads

Runoff originating on or accumulating on roads is collected in a series of ditches and culverts. Road bases were constructed with benign materials (non-acid forming), thus not contributing to impaired water quality.

2.1.3 Airstrip

The gradient of the airstrip results in run-off flow from south to north. Meltwater and stormwater flow parallel to the strip, controlled through a combination of natural gradient, culverts, and ditches. The water flows naturally to Boot Lake, to the northwest, and typically carries negligible sediment.

2.2 Best Management Practices

LMI utilizes a number of best management practices (BMPs) to control the discharge of stormwater runoff to points outside the mine's footprint, as discussed in the following sections.

2.2.1 Good Housekeeping

Lupin management promotes good housekeeping and expects all personnel to perform job functions in a neat, clean, and orderly fashion so as to maximize personal safety and to minimize exposure of materials the environment, and subsequent potential accumulation in stormwater. Materials and equipment are stored throughout the site such that leaks and leaching are minimized and contained.

2.2.2 Preventative Maintenance

Regular inspection and maintenance of equipment and systems are key priorities at Lupin. Regularly scheduled maintenance for mobile equipment and fluid management systems occurs to make sure fluids in process do not escape. LMI seeks continuous improvement in maintenance and operations to maximize fluid recovery and to minimize downtime from equipment breakdowns.

2.2.3 Visual Inspections

Site conditions at materials storage facilities such as the cold storage buildings, warehouse, and tank farms, are visually inspected on a regular basis for unusual circumstances which might lead to environmental harm during the course of normal activities. Inspection results requiring attention are addressed in a timely manner.

2.2.4 Material Handling Practices

The following material handling practices are used by Lupin personnel to minimize exposure of pollutants to stormwater:

- containers are stored appropriately in designated storage locations at all times other than when in immediate use;
- lids, covers, and caps are in place at all times other than when in immediate use;
- operators use caution when refueling equipment on site or transferring materials; and
- refueling occurs in designated areas. In the event that refueling occurs outside of these areas, drip pans, spill sheets or other similar products will be utilized to contain any drips or spills.

2.2.5 Spill Prevention and Emergency Response

Lupin has in effect a *Spill Contingency Plan*, designed to deal with proper procedures for oil and chemical spill prevention and response. Employees are trained in procedures to minimize the environmental and health risks associated with these events.

2.2.6 Sediment and Erosion Control

Ephemeral and intermittent drainages exist throughout the Lupin Mine site, many of which convey flows only on one or two occasions per year when it rains heavily or during snowmelt. As there is a potential for sedimentation to occur in some of these ephemeral or intermittent drainages, the following control measures may be put in place: diversion ditching; dams; silt fencing; check dams; geotextile. Areas where runoff tends to accumulate will be regarded.

3 Liquid Waste

Liquid waste generated during care and maintenance at the Lupin site is either domestic or industrial and is managed in accordance with Part E of the Water Licence.

3.1 Domestic Waste

Under Part E(7) of the Water Licence, all sewage is to be discharged to the Sewage Lakes Disposal Facilities. The existing sewage facilities consist of several lift stations within the camp and an 800 m long 6 in diameter insulated steel pipeline to the first of two sewage lakes. The pipeline and lift stations, however, are currently not in use during care and maintenance; grey water and black water from camp accommodations and kitchen facilities is stored in a sewage tank adjacent to the 1300 wing of the accommodation complex. It is hauled to the Upper Sewage Lake for disposal daily. If camp capacity increases in the summer months, options for installation of a small diameter sewage line to convey greywater and sewage directly to the sewage lakes will be investigated.

A 'permeable' type dam with an emergency overflow exists between the upper and lower sewage lakes. Annual discharge from the lower sewage lake is controlled with a gated culvert and the use of a syphon. Water accumulating in sewage lakes is tested prior to discharge to the environment to ensure it is in compliance with part E(8) of the Water Licence. If compliant, water is discharged from LUP-14 to the environment. The following documents outline procedures for sampling discharge from the Sewage Lakes Disposal Facility in accordance with the Monitoring Program in Schedule J of water licence 2BM-LUP-0914:

- *Discharge Procedure: Tailings Containment Area and Sewage Lakes Disposal Facility, Lupin Mine (Care and Maintenance, 2012);* and
- *Sampling Procedure: Tailings Containment Area and Sewage Lakes Disposal Facility, Lupin Mine (Care and Maintenance, 2012)*.

3.2 Industrial Waste

Liquid industrial waste generated during care and maintenance includes water accumulating in the secondary containment structures of the fuel systems and the effluent that accumulates in the tailings containment area (TCA).

3.2.1 Fuel Containment System

Water accumulates in secondary containment of fuel storage facilities due to precipitation. In order to maintain secondary containment dry, accumulated water needs to removed and managed. Accumulated water is tested *in situ* prior to discharge to the environment to ensure it is in compliance with part E(9) of the Water Licence. Water that is not in compliance is pumped to a storage tank where it is held until it can be treated and subsequently released to the environment at LUP-27. Snow that is contaminated with hydrocarbons is collected and melted. The hydrocarbon portion is skimmed of the water using sorbent towels. The water is then tested and either discharged or stored prior to treatment and release to the environment.

3.2.2 Tailings Containment Area

The TCA is located approximately 6 km south of the Lupin Mine, and covers an area of about 361 ha within the 750 ha lease. The containment is divided into three main components: solids retention cells (cells 1 through 5), polishing ponds (Pond 1 and Pond 2) and the End Lake area (not used). There is a substantial amount of water present within the TCA, contained in Cell 4, Cell 5, Pond 1 and Pond 2, originating primarily from precipitation and, to a lesser extent, site run-off. All of this water is periodically transferred downstream to maintain a 1 m freeboard at all times. The water in Cell 4 is transferred to Pond 1 via gated valve, from here the water is transferred from Pond 1 to Pond 2 by way of siphon. Pond 2 is the largest pond; here, water is treated and tested prior to discharge to the environment to ensure it is in compliance with part E(8) of the water. If compliant, water is discharged from LUP-10 to the environment. The following documents outline procedures for sampling discharge from the TCA in accordance with the Monitoring Program in Schedule J of the Water Licence:

- *Discharge Procedure: Tailings Containment Area and Sewage Lakes Disposal Facility, Lupin Mine (Care and Maintenance, 2012);* and

- *Sampling Procedure: Tailings Containment Area and Sewage Lakes Disposal Facility, Lupin Mine (Care and Maintenance, 2012*).

In addition to sampling under the Water Licence Monitoring Program, Environmental Effects Monitoring (EEM) is required under the MMER. Water sampling under the EEM program will accompany any planned discharge from the TCA. The next phase of the biological EEM program, Cycle 4, is planned for 2013.